

CLAIMS

1. An optical information recording medium,
comprising:

5 a signal substrate that has at least a signal face
formed on one of the faces thereof with a center hole;

a center substrate that is placed in a manner so as to
seal the center hole and to be made flat with the signal
face of the signal substrate; and

10 a transparent layer that is formed on the signal face
of the signal substrate and at least one portion of the
center substrate,

wherein a means used for carrying out a clamping
process is provided in the center substrate.

15 2. The optical information recording medium according
to claim 1, wherein a thickness of the center substrate is
made equal to or greater than the thickness of the signal
substrate, and set to be not more than 1.2 mm.

20 3. The optical information recording medium according
to claim 1 or claim 2, wherein the transparent layer is
formed through processes in which a photocurable resin is
applied to the center substrate and drawn to expand thereon
through spinning rotations.

25 4. The optical information recording medium according
to any one of claims 1 to 3, wherein the center substrate

and the signal substrate are bonded to each other by using a photocurable resin.

5 5. The optical information recording medium according to any one of claims 1 to 4, wherein the signal substrate and the center substrate are melted by heat and bonded to each other on the side opposite to the signal face of the signal substrate.

10 6. The optical information recording medium according to any one of claims 1 to 5, wherein the joining portion of the signal substrate and the center substrate is made of the same material.

15 7. The optical information recording medium according to any one of claims 1 to 6, wherein the end face of the center hole of the signal substrate and the end face of the center substrate are formed into tapered shapes.

20 8. The optical information recording medium according to any one of claims 1 to 6, wherein the end face of the center hole of the signal substrate and the end face of the center substrate are formed into faces, each having concavities and convexities.

9. The optical information recording medium according to any one of claims 1 to 8, wherein a material forming the center substrate is a magnetic material or a material containing a magnetic material.

25 10. The optical information recording medium

according to any one of claims 1 to 9, wherein a clamp unit, formed in the center substrate, contains a material having a thermal conductivity of not less than 10 W/mK.

11. The optical information recording medium
5 according to any one of claims 1 to 10, wherein a reflective layer is formed on the center substrate that forms the same face as the signal face of the signal substrate.

12. The optical information recording medium
10 according to any one of claims 1 to 10, wherein the same material as an information recording material formed on the signal face of the signal substrate is formed on the center substrate that forms the same face as the signal face of the signal substrate.

13. The optical information recording medium
15 according to any one of claims 1 to 12, wherein a clamp portion, used for rotating the disk, is provided on the side opposite to the signal face.

14. The optical information recording medium
20 according to any one of claims 1 to 13, wherein the clamping means provided in the center substrate is a through hole, and the size of the hole is made smaller than the minimum outer diameter of the center substrate.

15. A manufacturing apparatus, which is a
25 manufacturing apparatus for an optical information

recording medium that comprises a signal substrate that has a signal face formed on at least one of the faces thereof with a center hole, a center substrate that is placed in a manner so as to seal the center hole and to be made flat
5 with the signal face of the signal substrate, an information recording layer that is at least formed on the signal face of the signal substrate and a transparent layer that is formed on the signal face of the signal substrate and at least one portion of the center substrate, and has a
10 structure in which a means used for carrying out a clamping process is provided in the center substrate, at least comprising:

a means for inserting the center substrate into the signal substrate in a manner so as to seal the center hole
15 and to be made flush with the signal face of the signal substrate having the center hole;

a means for spin-rotating the signal substrate and the center substrate on a rotation table in an integrated state, with photocurable resin dropped on the center substrate, so
20 that the photocurable resin is drawn and expanded; and

a means for curing the photocurable resin through light irradiation so that the center substrate and the signal substrate are formed into an integral part.

16. The manufacturing apparatus for an optical
25 information recording medium according to claim 15, wherein

the inserting means comprises processes in which after the center substrate has been fixed onto the rotation table, the signal substrate is sucked onto the table.

17. The manufacturing apparatus for an optical
5 information recording medium according to claim 15, wherein the center substrate is made of a magnetic material or a material containing a magnetic material, and the inserting means comprises a means for fixing the center substrate onto the table through a magnetic force and a means for
10 vacuum-sucking the signal substrate onto the table.

18. The manufacturing apparatus for an optical
information recording medium according to claim 15, wherein the inserting means comprises a process in which after the signal substrate has been placed on the rotation table, the
15 center substrate is sucked onto the table.

19. The manufacturing apparatus for an optical
information recording medium according to any one of claims
15 to 18, further comprising:

a means for bonding the center substrate and the
20 signal substrate to each other through a photocurable resin,
wherein a curing process of the photocurable resin and the curing process of the photocurable resin of the transparent layer are simultaneously carried out.

20. The manufacturing apparatus for an optical
25 information recording medium according to any one of claims

15 to 19, further comprising:

a means for forming an information recording layer after the signal substrate and the center substrate have been formed into an integral part.

5 21. The manufacturing apparatus for an optical information recording medium according to any one of claims 15 to 20, further comprising:

a means for melting by heat and bonding the signal substrate and the center substrate to each other on the
10 side opposite to the signal face of the signal substrate.

22. The manufacturing apparatus for an optical information recording medium according to claim 15, wherein the rotation table has a function for magnetically fixing the center substrate made of a magnetic material or a
15 material containing a magnetic material and a function for fixing the signal substrate through vacuum suction.

23. The manufacturing apparatus for an optical information recording medium according to claim 15, further comprising:

20 a means for applying a bonding agent or a photocurable material to the end face of the center substrate,

wherein the rotation table has a function for sucking the center substrate and the signal substrate.

24. The manufacturing apparatus for an optical
25 information recording medium according to claim 15, further

comprising:

a rotation table having a function for sucking one portion of the face of the transparent layer, and

a melt-bonding means for melting by heat and bonding
5 the center substrate and the signal substrate to each other.